

SERVICE MANUAL



C20

Date	Revise Version	Description
2010.09.21	V1.0	Initial Issue

Copyright August 2010 All Rights Reserved

Prepared:

July

Check:

Aliek

Approved:

Aliek

Preface

This manual is applied to C20 projection system. The manual gives you a brief description of basic technical information to help in service and maintain the product.

Your customers will appreciate the quick response time when you immediately identify problems that occur with our products. We expect your customers will appreciate the service that you offer them.

This manual is for technicians and people who have an electronic background. Please send the product back to the distributor for repairing and do not attempt to do anything that is complex or not mentioned in the troubleshooting.

Note: The information found in this manual is subject to change without prior notice. Any subsequent changes made to the data herein will be incorporated in future edition.

C20 Service Manual

Copyright July, 2010

All Rights Reserved

Manual Version 1.0

Table of Content

Chapter 1 Introduction

Highlight	1-1
Compatible Mode	1-2
Multimedia specification	1-5
Product Overview	1-6

Chapter 2 Disassembly & Assembly Process

Equipment Needed & Product Overview	2-1
Disassemble Battery Cover Module	2-2
Disassemble Top Cover Module	2-2
Disassemble Key Pad Module	2-3
Disassemble Speaker Holder	2-4
Disassemble Engine Module and Main Board Module	2-4
Disassemble the Focus Ring and Focus Gear and IR Cover	2-6
LED Duty Selection	2-7
Assemble the Focus Ring and Focus Gear and IR Cover	2-8
Assemble Engine Module and Main Board Module	2-9
Assemble Speaker Holder	2-10
Assemble KeyPad Module	2-11
Assemble TOP Cover Module	2-12
Assemble Battery Cover Module	2-12

Chapter 3 Troubleshooting

Main Procedure	3-1
----------------	-----

Chapter 4 Function Test & Alignment Procedure

Test Equipment Needed	4-1
Service Mode	4-1
System Reset	4-1

	Test Condition	4-2
	Test Inspection Procedure	4-3
	PC Mode	4-4
	Video Performance	4-6
	SD Card Test	4-7
	Optical Performance Measure	4-7
	Others	4-9
Chapter 5	Firmware Upgrade	
	Equipment Needed	5-1
	Firmware Upgrade Procedure	5-2
Chapter 6	EDID Upgrade	
	EDID introduction	6-1
	Equipment needed	6-2
	Setup procedure	6-3
	EDID Key-In Procedure(VGA & HDMI Interface)	6-3
Appendix A		
	Exploded Image and FRU list	I
Appendix B		
	Serial Number System Definition	I
	PCBA Code Definition	II

Introduction

1-1 Highlight

No	Item	Description
1	Dimensions (WxDxH)	• 118mm x 60.80mm x 18.60mm
2	Weight	• < 135g without battery (Battery is 31g)
3	Power Supply	• Auto-ranging: AC100V ~ 240V \pm 10%, 50-60Hz DC 5V/2A, 10W
4	Power consumption	• Multimedia File Playback: <7.9W (Typical) in Bright Mode; <5.9W in ECO mode • VGA display mode: <7.4W (Typical) in Bright Mode; <5.4W in ECO mode • Standby Mode \leq 0.01W @battery, projector turned on by keypad
5	Terminal	• VGA In *1: One 24-Pin Universal Connector for PC input and analog Data (Component i/p, HDTV, RGB Sync) • Audio/Video In*1 : 2.5mm Mini Jack. (For audio/composite source) • USB * 1: One Micro USB support Host mode (For multimedia) • HDMI *1: Micro HDMI Connector • DC in*1
6	Resolution	• 854 x 480
7	Number of active dots	• Number of active dots: 854(H) x 480(V)
8	Throw ratio	• 2.2 +/-5% (Distance / Width)
9	Throw Distance	• 24cm to 324cm
10	Input signal spec	- Hsync Frequency 30k~ 50kHz - Vsync Frequency 50/60Hz - Video Signal RGB (PC) • Analog RGB 0.7Vp-p, 75 ohm, Separate TTL H,V Sync • Analog RGB 1Vp-p, 75 ohm, Sync. On Green signal • Analog RGB 0.7Vp-p, 75 ohm, Composite TTL Sync. - Video • Composite video 1Vp-p, 75 ohm • Component Video 1Vp-p, 75 ohm
11	Video Compatibility	- Standards : • NTSC (3.58/4.43) • PAL (B/D/G/H/I/M/N) • SECAM (B/D/G/K/K1/L) • HDTV (480i, 576i 480p, 576p, 720p, 1080i, 1080p)

No	Item	Description
12	Brightness	<ul style="list-style-type: none"> • 17 ANSI Lumens (Typical) • 14.5 ANSI Lumens (Minimum) • Marketing spec:20 ANSI Lumens
13	Contrast	<ul style="list-style-type: none"> • 1300 :1 Full White with full power / full Black with eco power(Native) • 900:1 (Minimum) • Marketing spec:2000:1
14	Uniformity	<ul style="list-style-type: none"> • 70% Japan standard (Minimum; Full power mode) • 80% Japan standard (Typical; Full power mode) • Marketing spec: 85%
15	Projection Image Size	• Adjustable from 5"to 66"
16	LED Life	• 10,000 Hours Bright Mode @ 3W, B50/L50*Note Survival Rate
17	Temperatures	<ul style="list-style-type: none"> • Operating: 5 ~ 35 °C • Non-operation: -20°C ~ 60°C • Battery charge : 5 ~ 35°C
18	Altitude	<ul style="list-style-type: none"> • Operating: 0 ~ 2,500 ft, for 5°C~35°C 2,500 ft ~ 5,000 ft, for 5°C~30°C 5,000 ft ~ 10,000 ft, for 5°C~25°C
19	Audio	• Built-in Speaker 0.5W x 1
20	Focal Length (f)	• 14.788mm @ 20"
21	DMD	• "TI" DMD , 0.3" WVGA DMD
22	System controller	• TI DPP2600/ MST7286 (Scalar, ADC/VDC)

1-2 Compatible Mode

A. VGA Analog			
(1) VGA Analog - PC Signal			
Modes	Resolution	V.Frequency[Hz]	H.Frequency[KHz]
VGA	640x480	60	31.5
WVGA	848x480	60	29.8
SVGA	800x600	60	37.9
XGA	1024x768	60	48.4
PowerBook G4	640x480	60	31.4
PowerBook G4	800x600	60	37.9
PowerBook G4	1024x768	60	48.4
(2) VGA Analog - Extended Wide timing			
Modes	Resolution	V.Frequency[Hz]	H.Frequency[KHz]
WXGA	1280x768	60	47.8
	1280x720	60	44.8
	1280x800	60	49.6
(3) VGA Analog -Component Signal			
Modes	Resolution	V.Frequency[Hz]	H.Frequency[KHz]
480i	720x480	59.94(29.97)	15.7
576i	720x576	50(25)	15.6
480p	720x480	59.94	31.5
576p	720x576	50	31.3
720p	1280x720	60	45
720p	1280x720	50	37.5
1080i	1920x1080	60(30)	33.8
1080i	1920x1080	50(25)	28.1
B. HDMI Digital			
(1) HDMI - PC Signal			
Modes	Resolution	V.Frequency[Hz]	H.Frequency[KHz]
VGA	640x480	60	31.5
WVGA	848x480	60	29.8
SVGA	800x600	60	37.9
XGA	1024x768	60	48.4
PowerBook G4	640x480	60	31.4
PowerBook G4	800x600	60	37.9
PowerBook G4	1024x768	60	48.4
(2) HDMI - Extended Wide timing			
Modes	Resolution	V.Frequency[Hz]	H.Frequency[KHz]
WXGA	1280x768	60	47.8

	1280x720	60	44.8
	1280x800	60	49.6
(3) HDMI - Video Signal			
480i	720x480(1440x480)	59.94(29.97)	15.7
576i	720x576(1440x576)	50(25)	15.6
480p	720x480	59.94	31.5
576p	720x576	50	31.3
720p	1280x720	60	45
720p	1280x720	50	37.5
1080i	1920x1080	60(30)	33.8
1080i	1920x1080	50(25)	28.1
Graphic source monitor range limits	Horizontal scan rate:	29k-50kHz	
	Vertical scan rate:	50-60Hz	
	Max. pixel rate	100MHz	

1-3 Multimedia specification

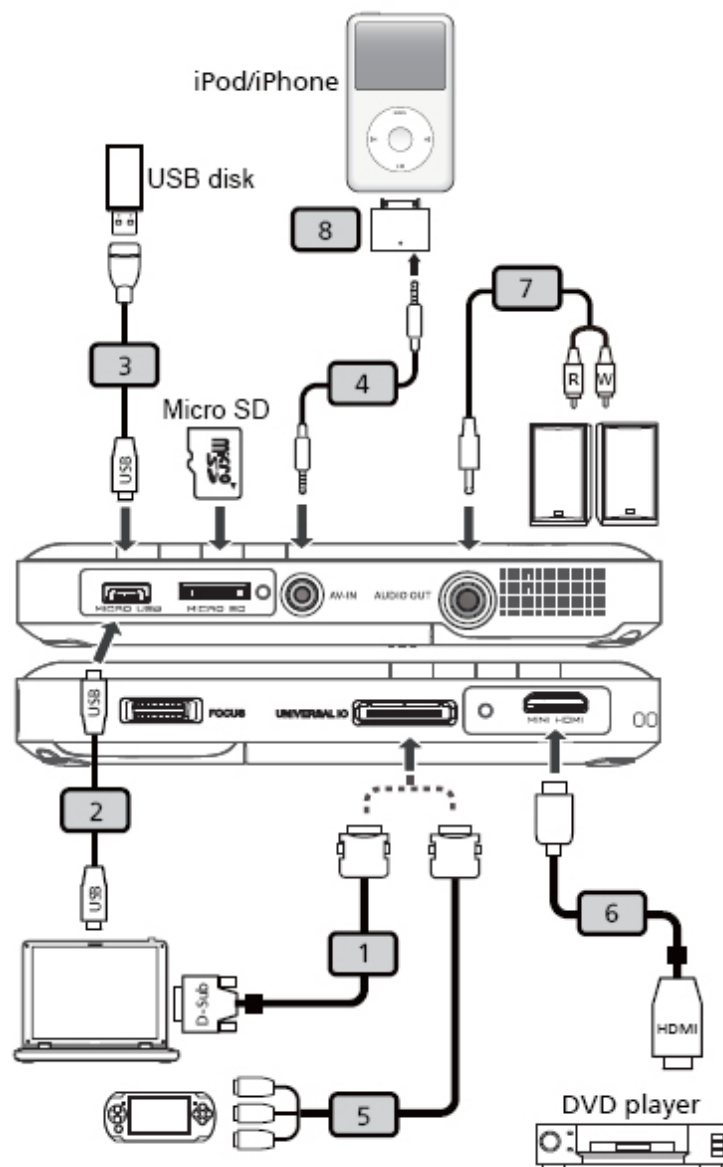
Video			
File format	Video Format	Max res.	Profile
AVI,MOV,MP4,3GP	H.264	720x480 30fps or 720x576 25fps	Baseline
AVI	MPEG4	720x480 30fps or 720x576 25fps	Simple Profile
AVI	Xvid	720x480 30fps or 720x576 25fps	Baseline
AVI	MJPEG	640x480 30fps	Baseline
Note: Video format does not support content with B-Frame function			
Photo			
File format	File extension		
BMP	*.bmp		
JPG, JPEG	*.jpg, *.jpeg		
Audio			
AAC, MP3, PCM, ADPCM, WMA, OGG,			

1-4 Product Overview



Item	Description	Item	Description
1	Power Button	11	Audio Out Connector
2	Enter Button	12	AV Input Connector
3	Battery Indicator	13	MicroSD Card Slot
4	Auto Search Source Button	14	Micro USB port
5	Navigation/Volume Button (up/down/left/right)	15	Through-hole for straps
6	Menu/Esc Button	16	Lens
7	Focus Dial	17	IR Receiver
8	VGA/Component Input Connector	18	DC Input
9	Mini HDMI Connector	19	Screw Hole for Tripod Converter
10	Speaker	20	Battery Cover

Connecting the Projector



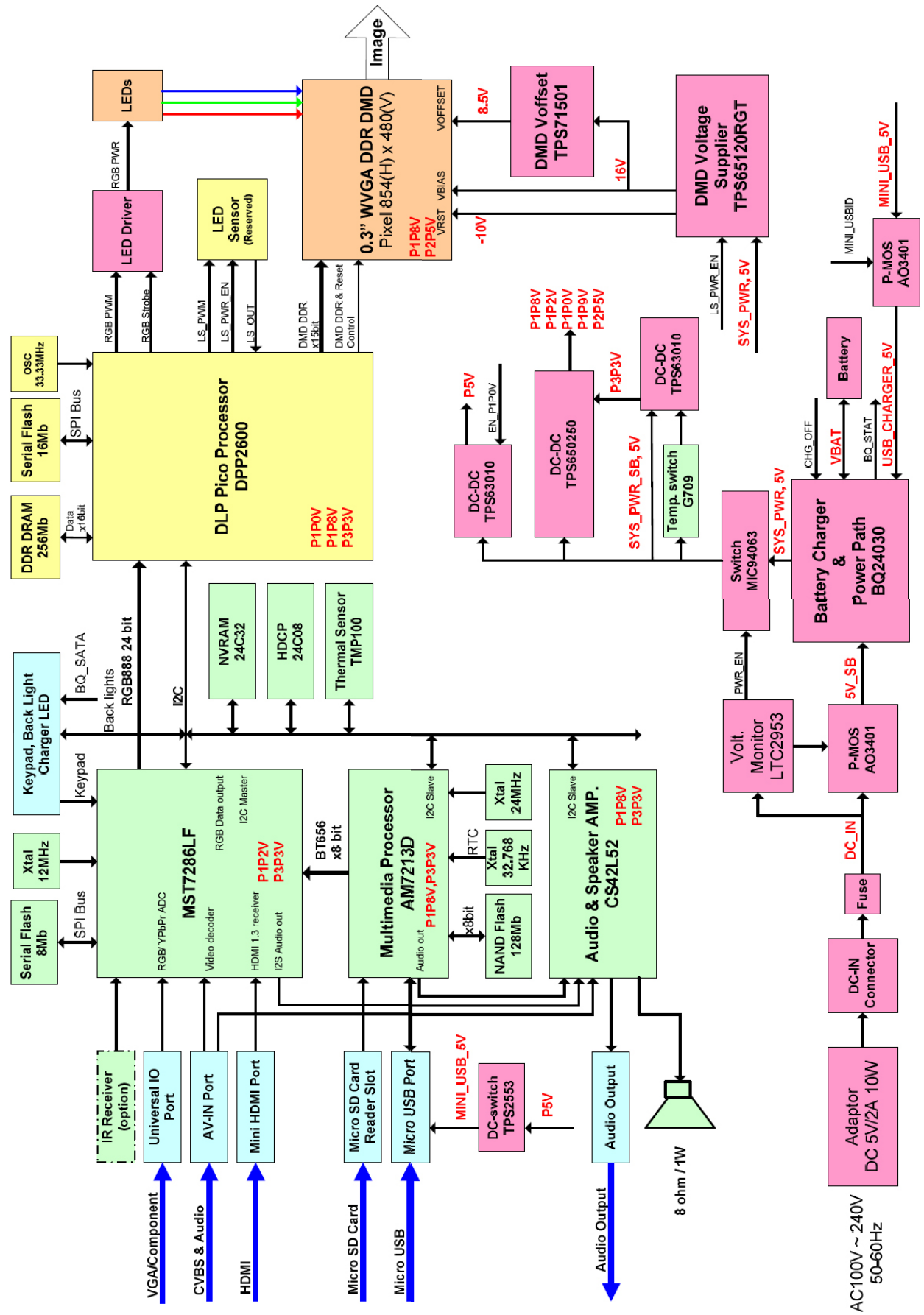
Item	Description	Item	Description
1	Universal-to-D-Sub Cable	5	Universal to RCA Cable
2	USB Cable	6	HDMI Cable (mini-to-STD)
3	Micro USB to USB A Cable	7	Audio Cable Jack/RCA
4	2.5mm-to-3.5mm A/V Cable	8	Adapter for iPod/iPhone



.....

Note: To ensure the projector works well with your computer, please make sure the timing of the display mode is compatible with the projector.

System Block Diagram



Disassembly & Assembly Process

2-1 Equipment Needed & Product Overview

1. Screw Bit (+): No.00
2. Tweezers (Wide flat-head tweezers)
3. C20 units

** Before you start: This process is protective level II. Operators should wear electrostatic chains.*



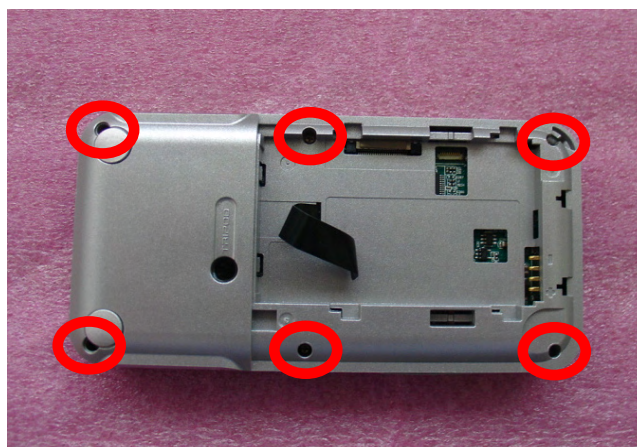
2-2 Disassemble Battery Cover Module

1. Disassemble the Battery Cover Module (as red arrow direct).
2. Remove the Battery.



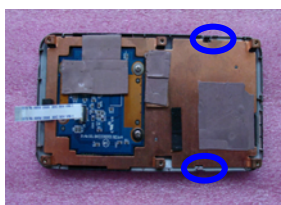
2-3 Disassemble TOP Cover Module

1. Unscrew 6 screws from the Bottom Cover (as red circle).



2. Unplug the keypad cable which connects to the main board.(as red circle)

Note: - There are 2 tenons (as blue circle) of the top cover,when disassembling it, you must be careful so as not to damage the top cover.



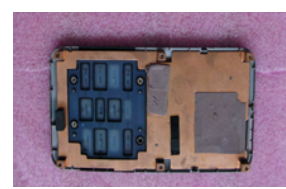
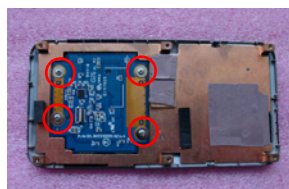
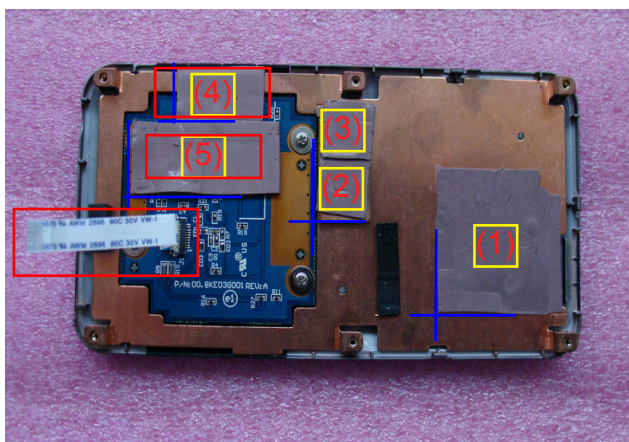
2-4 Disassemble KeyPad Module

1. Unplug the keypad cable which connects to the keypad board and tear off two thermal pads.(as red square)
2. Unscrew 4 screws.(as red circle)
3. Take out the keypad board.

Note: - To distinguish the five thermal pads,here list the PN of them.

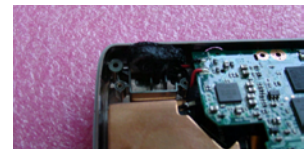
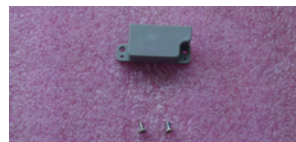
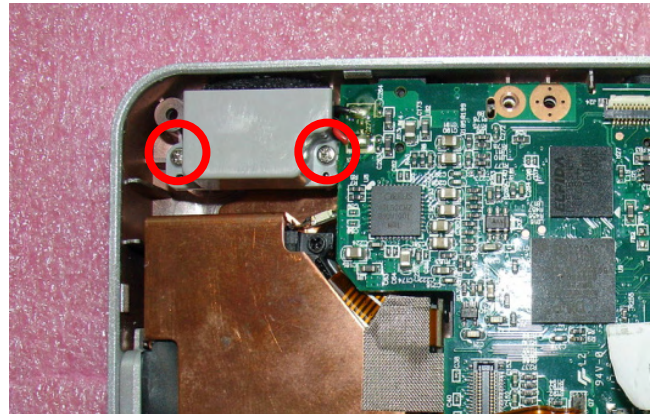
- (1) 52.8EN09G001
- (2) 52.8EN07G001
- (3) 52.8EN06G001
- (4) 52.8KE04G001
- (5) 52.8KE05G001

- When paste the thermal pads,please refer to the blue lines.



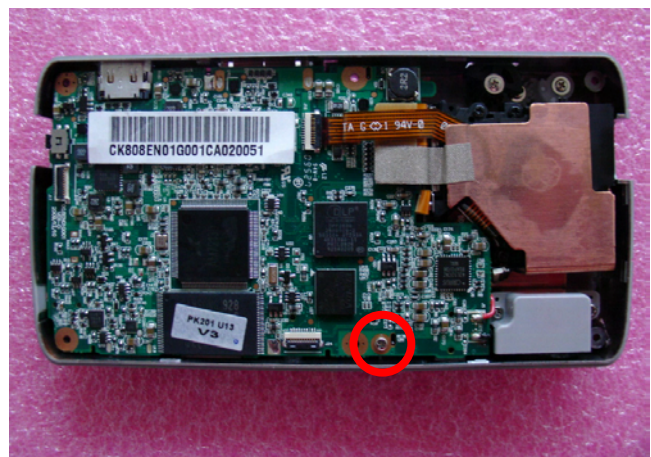
2-5 Disassemble Speaker Holder

1. Unscrew 2 screw (as red circle) to disassemble the Speaker Holder.

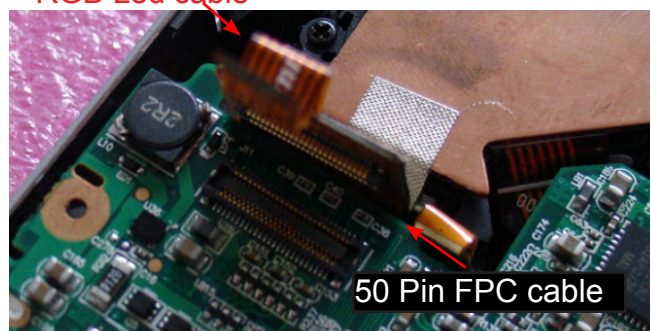


2-6 Disassemble Engine Module and Main Board Module

1. Unplug the RGB Led cable first and then unplug the 50 Pin FPC cable.
2. Unscrew 1 screw (as red circle).
3. Disassemble the Main Board Module from the Bottom Cover Module.

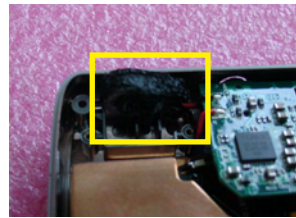
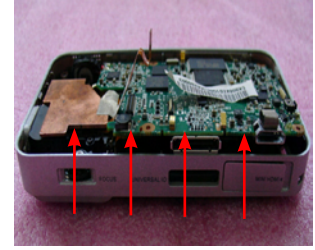
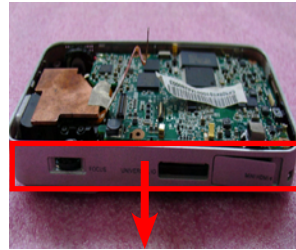


RGB Led cable



Note: - To disassemble the Main Board from the bottom cover module, you can push one side of the bottom cover module out and then lift up the main board (as red arrow)

- After then, take out the speaker from the slot. (as yellow square)
- Finally, take out the main board module and speaker simultaneously.
- If the bottom cover module is broken during disassembling process, please change it.

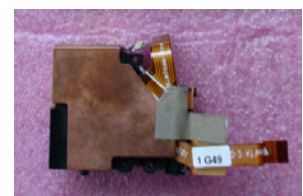
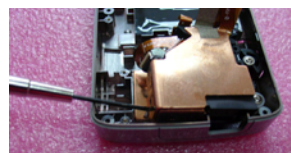
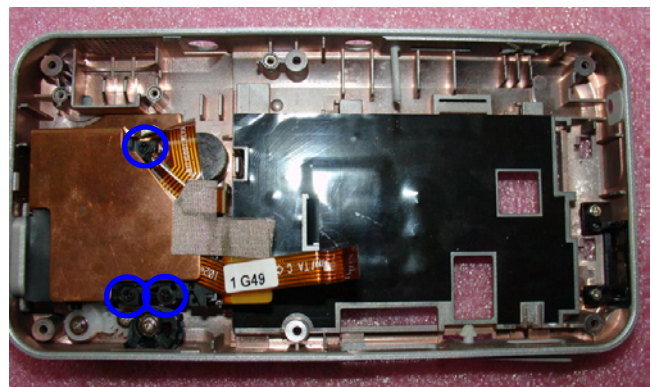


4. Unscrew 3 screws (as blue circle).

5. Disassemble the Engine Module.

Note: - To avoid breaking the Engine Module, you'd better use a wide flat-head tweezers to separate the Engine Module and the Bottom Cover Module.

- After the right side of the Engine Module separate from the bottom cover, remove the tweezers towards to left side gradually.
- Take out the Engine Module.
- Take out the Cone Guide (as red square).



2-7 Disassemble the Focus Ring/Focus Gear and IR Cover

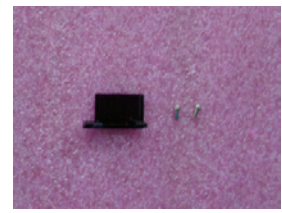
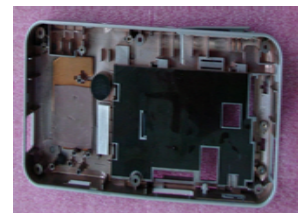
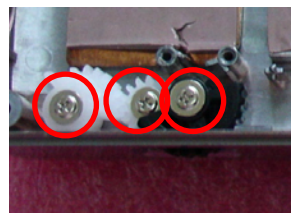
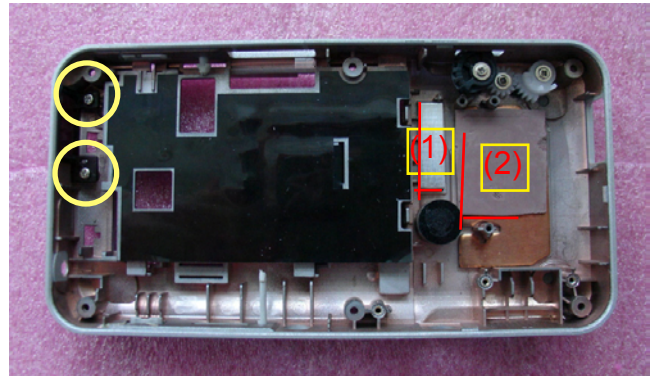
1. Unscrew 3 screws (as red circle).
2. Disassemble the Focus Ring and Focus Gear.
3. Unscrew 2 screws (as yellow circle)
4. Disassemble the IR Cover
5. Disassemble complete.

Note: - To distinguish the two thermal pads, here list the PN of them.

(1) 52.8EN10G001

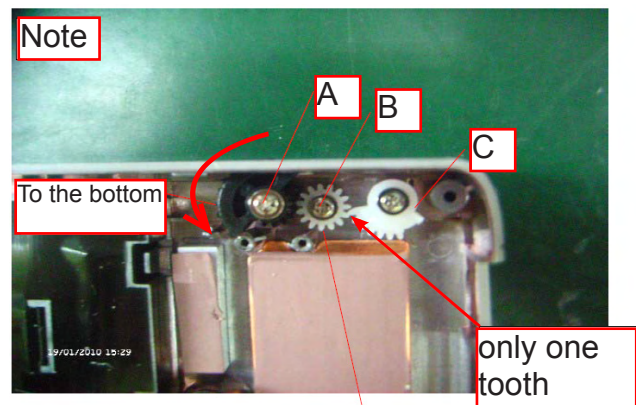
(2) 52.8EN12G001

- When paste the thermal pads, please refer to the red lines.



Note:- Please do follow steps when assemble the three focus gears.

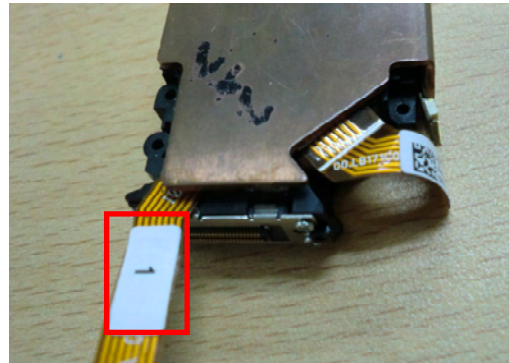
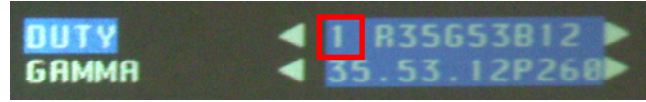
- Allocate gear A to the bottom, as red arrow direct.
- Put gear B into the copper bar.
- Put into gear C and make sure only one tooth lean against gear B.



2-8 LED Duty Selection

After changing the main board or engine module, we should match the "DUTY" value to the engine value.

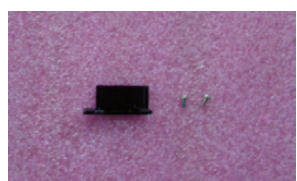
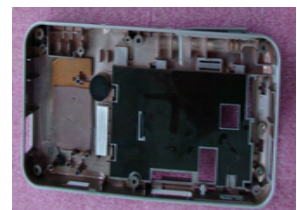
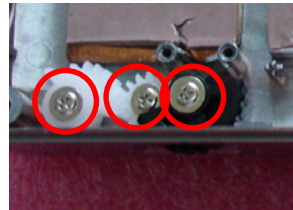
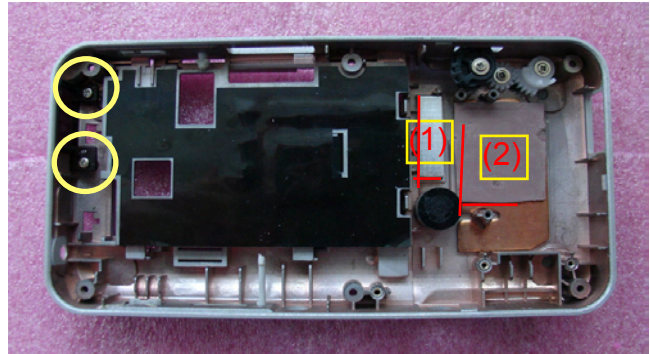
1. Get into service mode, choose "DUTY".
2. Check the value of engine module.
3. Press "left" or "right" to choose the "DUTY" value.
4. Ensure the "DUTY" value is same with the engine value (as red squares).
5. If there is no value on the engine module, the "DUTY" value should be 7.



2-9 Assemble the Focus Ring/ Focus Gear and IR Cover

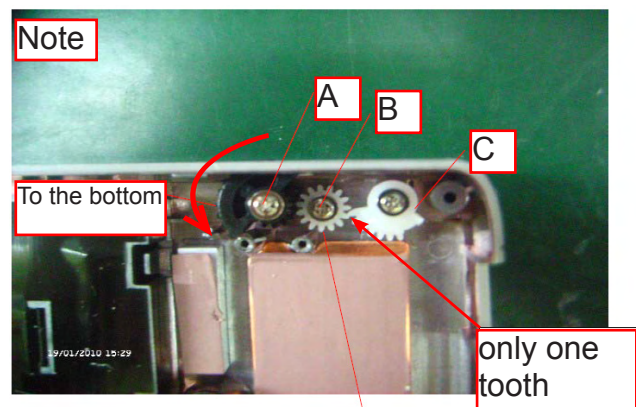
1. Screw 2 screws (as yellow circle).
2. Assemble the IR Cover
3. Screw 3 screws (as red circle)
4. Assemble the Focus Ring and Focus Gear.

*Note: - To distinguish the two thermal pads, here list the PN of them.
 (1) 52.8EN10G001
 (2) 52.8EN12G001
 - When paste the thermal pads, please refer to the red lines.*



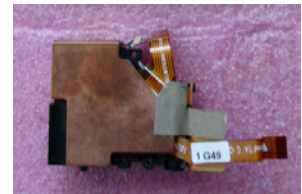
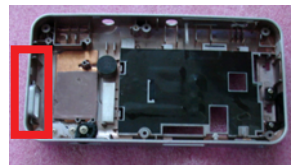
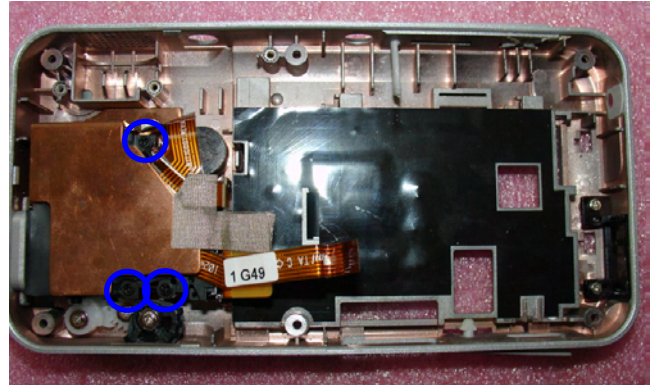
Note:- Please do follow steps when assemble the three focus gears.

- Allocate gear A to the bottom, as red arrow direct.
- Put gear B into the copper bar.
- Put into gear C and make sure only one tooth lean against gear B.

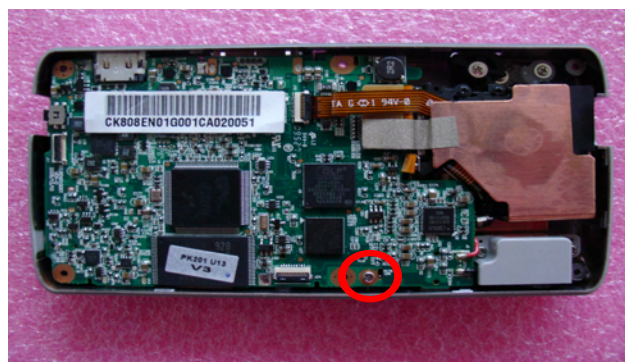
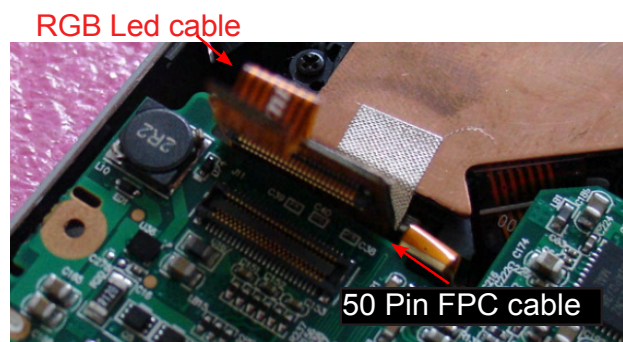


2-10 Assemble Engine Module and Main Board Module

1. Screw 3 screws (as blue circle).
2. Assemble the Engine Module.
3. Assemble the Cone Guide (as red square).

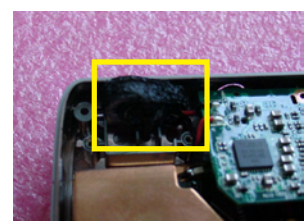
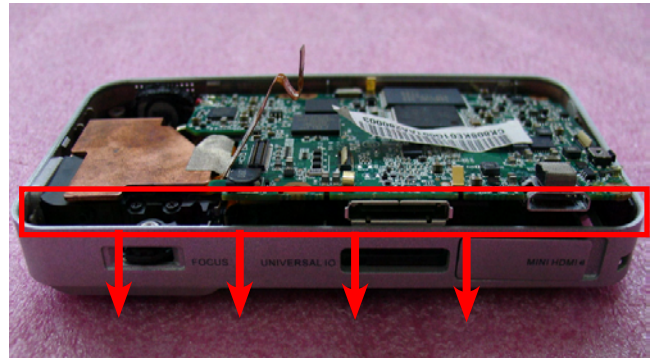


4. Assemble the Main Board Module.
5. Plug the 50 Pin FPC cable first and then plug the RGB Led cable.
6. Screw 1 screw (as red circle).



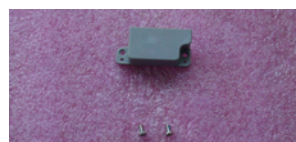
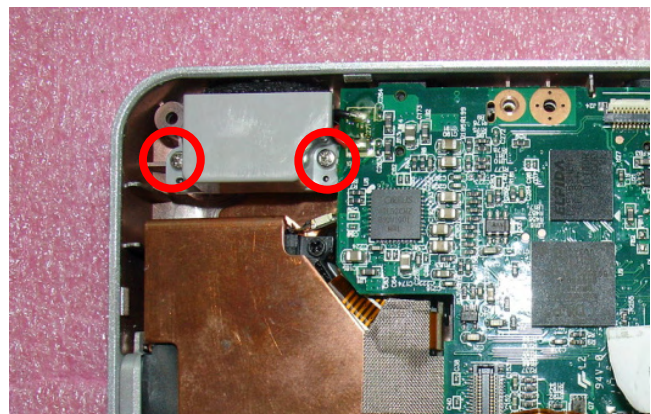
Note: - To assemble the Main Board from the bottom cover module, you can pull one side of the bottom cover module in and then lift down the main board (as red arrow)

- After then, put the speaker in the slot. (as yellow square)*
- If the bottom cover module is broken during assembling process, please change it.*



2-11 Assemble Speaker Holder

1. Screw 2 screw (as red circle) to assemble the Speaker Holder.



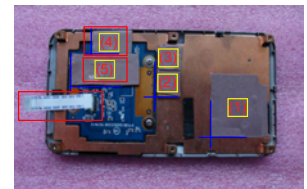
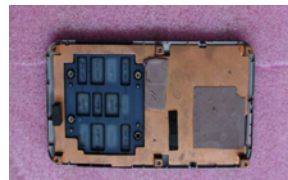
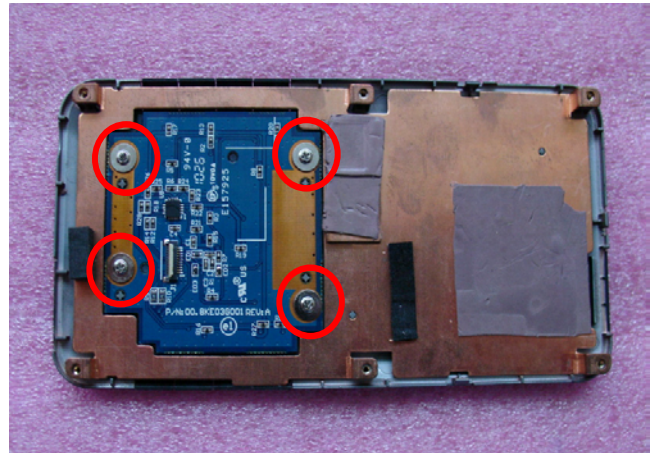
2-12 Assemble KeyPad Module

1. Screw 4 screws.(as red circle)
2. Plug the keypad cable which connects to the keypad board and paste two thermal pads.(as red square)

Note: - To distinguish the five thermal pads,here list the PN of them.

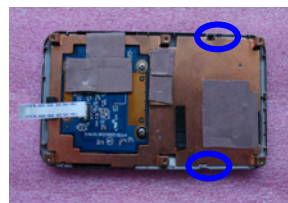
- (1) 52.8EN09G001
- (2) 52.8EN07G001
- (3) 52.8EN06G001
- (4) 52.8KE04G001
- (5) 52.8KE05G001

- When paste the thermal pads,please refer to the blue lines.



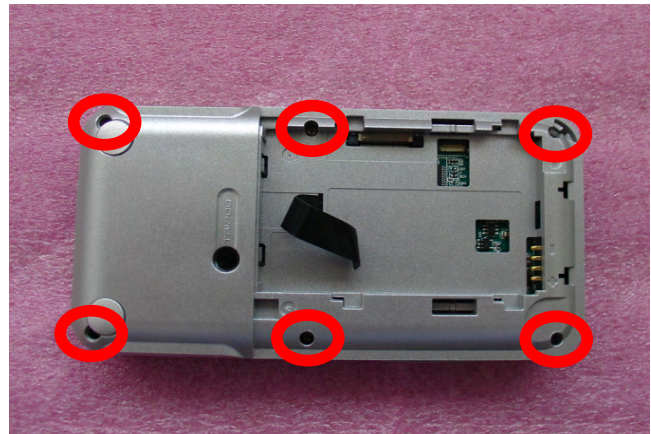
2. Plug the keypad cable which connects to the main board.(as red circle)

Note: - There are 2 tenons (as blue circle) of the top cover,when assembling it, you must be careful so as not to damage the top cover.



2-13 Assemble TOP Cover Module

1. Screw 6 screws on the Bottom Cover (as red circle).



2-14 Assemble Battery Cover Module

1. Put the Battery in.
2. Assemble the Battery Cover Module (as red arrow direct).
3. Assemble complete.



Troubleshooting

Main Procedure

No	Symptom	Procedure
1	No Power	<ul style="list-style-type: none">• Ensure the Power Adapter and Outlet or battery are connected securely• Ensure all connectors are securely connected and aren't broken• Check keypad board• Check Main Board
2	Auto Shut Down	<ul style="list-style-type: none">• Check the Power Adapter and Outlet or battery• Check Main Board
3	No Image	<ul style="list-style-type: none">• Ensure the Signal Cable and Source work well• Ensure all connectors are securely connected• Check Main Board• Check Engine Module
4	No Light On	<ul style="list-style-type: none">• Ensure all connectors are securely connected and aren't broken• Check Engine Module• Check Main Board
5	Line Bar/Line Defect	<ul style="list-style-type: none">• Check if the Main Board and the Engine Module are assembled properly• Check Main Board• Check Engine Module
6	Image Flicker	<ul style="list-style-type: none">• Do "System reset" in Service mode• Ensure all the signal cables and source work well• Check Engine Module• Check Main Board

No	Symptom	Procedure
7	Color Abnormal	<ul style="list-style-type: none"> • Do "System reset" in Service mode • Do "Duty selection" in Service mode • Check the source cable is connected properly • Check Main Board • Check Engine Module
8	Poor Uniformity/ Shadow	<ul style="list-style-type: none"> • Ensure the projection screen without dirt • Ensure the projection lens is clean • Ensure the Brightness is within spec • Check Engine Module
9	Dead Pixel/Dust (Out of spec.)	<ul style="list-style-type: none"> • Ensure the projection screen without dirt • Ensure the projection lens is clean • Check Engine Module
10	Garbage Image	<ul style="list-style-type: none"> • Ensure that the signal cables and source work well. • Check Main Board • Check Engine Module
11	Function Abnormal	<ul style="list-style-type: none"> • Do "System reset" in Service mode • Check Main Board
12	Audio Abnormal	<ul style="list-style-type: none"> • Ensure that the signal cables and source work well • Check Speaker • Check Main Board
13	FW Upgrade Failed	<ul style="list-style-type: none"> • Ensure that the signal cables and PC work well • Check the software program version • Check the firmware file • Check the upgrade process • Check Main Board
14	Micro SD Card/ Micro USB Function Failed	<ul style="list-style-type: none"> • Ensure that the signal cables and source work well • Check the source is compatible to the projector • Check SD Card • Check Main Board

Function Test&Alignment Procedure

4-1 Test Equipment Needed

- DVD player with Multi-system (NTSC/PAL)
- Minolta CL-100
- Equipped "Component", "S-Video" , "Composite"
- Quantum Data 802B or CHROMA2327 (Color Video Signal & Pattern Generator)
- Remote control (P/N: 45.89Z01G001 only for C20 test using)
- C20 24P to VGA-M (P/N: 42.0020AG001)
- MINI JACK-M 2.5mm TO 3.5mm 1000mm cable (P/N: 42.002C1G003)

4-2 Service Mode

1. Turn on the projector
2. Do the following actions sequentially to get into service mode
 - Press "Menu Menu Menu -> Left Left -> Menu" on the projector.
 - Service mode will be shown
 - After confirming the configuration, press "menu" to exit.

4-3 System Reset

After final QC step,we have to erase all saved change. The following actions will allow you to erase all end-users' settings and restore the default setting:

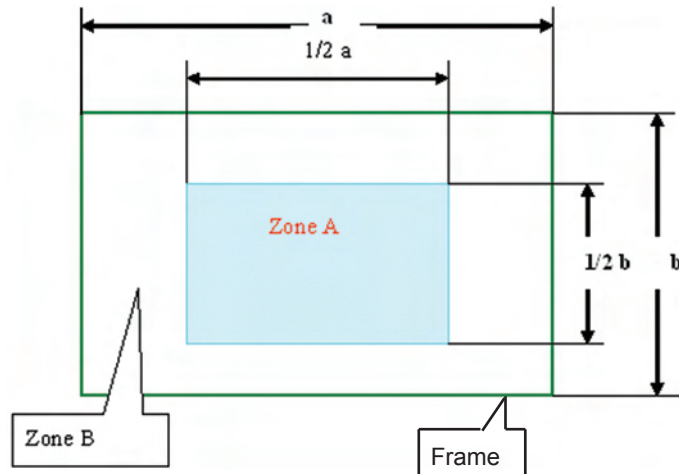
- Get into service mode.
- Press "right" and then choose "system reset" at the bottom of the menu.

4-4 Test Condition

4-4-1 Normal Test Condition

- Circumstance brightness: Dark room less than 2.0 lux
- Screen size: 20 inches

Screen Defects



< Figure: Zone A, Zone B & Frame (as green line) Definition, Active area=Zone A+ Zone B >

Defect specification table

Order	Symptom	Pattern	Criteria
1	Dark pixel (dots)	White pattern	$A+B \leq 4$
2	Unstable pixel (dots)	Any pattern	$A+B=0$
3	Adjacent pixel (dots)	Any pattern	$A+B=0$
4	Bright pixel (dots)	Gray 10 pattern	$A+B=0$
5	Bright dot on frame	Gray 10 pattern	≤ 1

4-4-2 Burn-In Test

- Temperature: 15°C~35°C
- Circumstance brightness: Normal environment
- Screen size: No concern
- Display mode: ECO mode

After repairing C20, it should be Burn-in (refer to the below table).

Symptom	Burn-in Time
Normal repair	2 hours
NFF	4 hours
Auto shutdown	6 hours

- Get into Burn-In Mode

* Cycle setting is based on the defect symptoms. ie: If it is NFF, the burn-in time is 4 hours. You have to set the lamp on for 50 min. and lamp off for 10 min for 4 cycles.

Note: Please make sure that the hot exhaust airflows from projectors can flow towards the aisle.

Get into Service Mode (as above step 4-2)	
Choose Burn In > enter	
Lamp On (Min)	Press right key to adjust the time (50)
Lamp Off (Min)	Press right key to adjust the time (10)
Set Burning cycle	Press right key to adjust the cycle
After setting up the time, choose "Enter into Burn In Mode" and press "Menu" button.	

4-5 Test Inspection Procedure

- After changing parts, check the information below

Update	Change parts		
	Main Board Module	Firmware	Engine Module
Version Update	V	V	
System Reset	V	V	
EDID	V		
Duty Selection	V		V

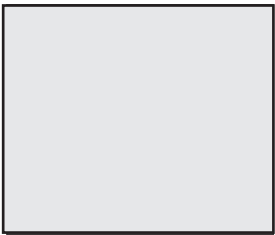
4-6 PC Mode

1. Bright Pixel

Note: Link Chroma VGA port to the “Universal I/O” port of the projector by universal to VGA cable.



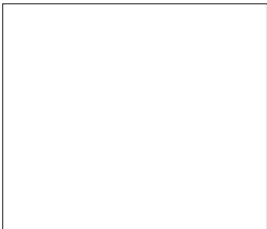
Procedure	<ul style="list-style-type: none">- Test equipment: video generator.- Test signal: analog 800x600@60Hz.- Test Pattern: Gray 10 pattern
Inspection item	<ul style="list-style-type: none">- Bright pixel check.- Adjacent pixel check.
Criteria	<ul style="list-style-type: none">- Bright pixel is unacceptable.- Only one bright dot on frame is acceptable.- Adjacent pixel with each other is unacceptable.



Gray 10

2. Dark Pixel

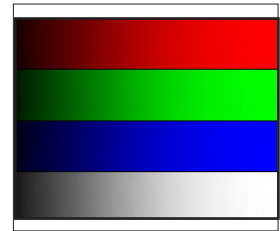
Procedure	<ul style="list-style-type: none">- Test equipment: video generator.- Test signal: Analog 800x600@60Hz.- Test Pattern: white pattern
Inspection item	<ul style="list-style-type: none">- Dark pixels check.- Adjacent pixel check.
Criteria	<ul style="list-style-type: none">- The number of the dead pixels should be less or equal to 4 pixels.- Adjacent pixel with each other is unacceptable.



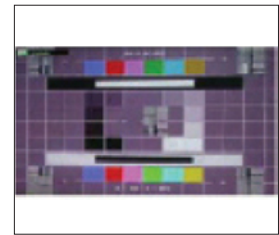
white pattern

3. Color performance

- Procedure
- Test equipment: video generator
 - Test signal: Analog 800X600@60HZ
 - Test Pattern: 64 gray RGBW, Master pattern
 - * Please refer to 4-2 to get into service mode.
- Use test signal to do the test. Color can not discolor to purple and blue.
- Inspection item
- Check if each color level is well-functioned.
 - Color saturations
- Criteria
- Screen appears normal. It should not have any abnormal condition, such as lines appear on the screen and so on.
 - Color appears normal.
 - RGBW should all appear normal on the screen and sort from R-G-B-W.
 - Color levels should be sufficient and normal.



64 gray RGBW



Master pattern

4. Power Function Test

- Procedure
- Install the battery into the projector, link “dc in” port of the projector to the power supply.
- Inspection item
- Check whether the LED indicator shows red and charge or discharge normally.
- Criteria
- check whether the charging function is normal.
 - It means the charging have completed when the green LED is lighting.
 - Unplug the power adapter, turn on the projector to check if the discharging is normal.



Message	LED
Operation	○
Battery Charging	●
Charge Complete	●

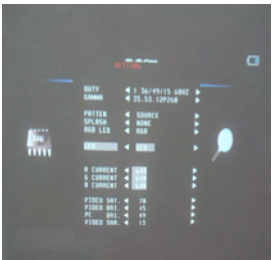
4-7 Video Performance

*Note: Plug JACK-M to 3*RCA-F R/W/Y cable into the AV-IN port of projector, the CVBS signal and Audio signal will be inputted. Then turn the sound of DVD player down.the signal test is as follows.*



1. ECO/Bright Mode Function Test

Turn on the projector, get into service mode then press “Left”/“Right” button on remote control to check if Bright mode/ECO mode exchange normally.



2. CVBS

Procedure	- Test equipment: DVD player - Test signal: CVBS
Inspection item	- Video performance test
Inspection Distance	- 0.8 M ~1.0 M
Criteria	- Check any abnormal color, line distortion or any noise on the screen. - Check the sound from speaker.



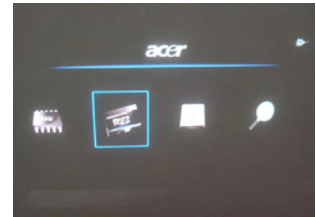
Motion video

3. Audio Test

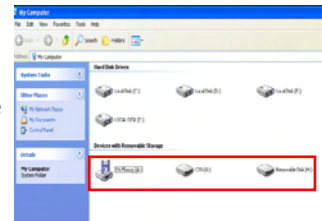
Procedure	- Test equipment: DVD player - Test signal: CVBS
Inspection item	- Audio performance test
Inspection Distance	- 0.8 M ~1.0 M
Criteria	- Check the sound from speaker - Press “Up” button of the projector to modulate the volume to 18, then press “down” button to modulate the volume to 15, check whether the volume is normal.

4-8 SD Card Test

1. Turn on the projector and unplug signal cable, select “Video”, play the video file in it:
 - Check any abnormal color, line distortion or any noise on the screen.
 - Check the sound from speaker.



2. Turn on the projector, connect “micro USB” port of the projector and PC USB port by universal to USB cable:
 - Check whether PC can detect the SD card information, there should be three removable disk.



4-9 Optical Performance Measure

Inspection Condition
<ul style="list-style-type: none">- Environment luminance: 2 Lux- Product must be warmed up for 2 minutes- Distances from the screen: 0.8 M~1 M- Screen Size: 20 inches diagonal

1. Test equipment

- Procedure
- Please get into bright mode, focus should be clear, the display format is 3:2.
 - Get into service mode on remote control, then press “Left” or “Right” to select full white and full black pattern, then start signal test.

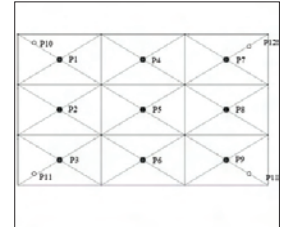
2. Brightness

- Procedure
- Full white pattern
 - Use CL100 to measure brightness values of P1~P9.
 - Follow the brightness formula to calculate brightness values.

☀ Brightness Formula

$$\text{Avg. } (P1+P2+P3+\dots+P9) \times 0.12$$

- Criteria
- 8 ANSI Lumens



Full white pattern

3. Full On/Full Off Contrast

- Procedure
- Full white pattern & full black pattern
 - Use CL100 to measure brightness values of full white pattern P5 & full black pattern B5 (see image: full white)
 - Follow Contrast formula to calculate contrast values.

☀ Contrast Formula

$$P5/B5$$

Note: P5=center of white image

B5 = the center of black image.

- Criteria
- 800:1



Full black pattern

4. Uniformity

- Procedure
- Full white pattern
 - Use CL100 to measure brightness values of P1~P9 (see image: full white).
 - Follow the Uniformity formula to calculate average values.

☀ Uniformity Formula

$$\text{ANSI Uniformity} = \text{Avg.}(P1,P3,P7,P9)/P5 \times 100\%$$

- Criteria
- 65 %

4-10 Others

1. Function Inspection

Keypad button	- All keypad buttons must operate smoothly.
General	- All OSD functions must be checked for functionality. When OSD menu is displayed, there shall be no visible peaking, ringing, streaking, or smearing artifacts on the screen.
Factory Default	- The factory settings (with appropriate centering, size, geometry distortion, etc.) shall be displayed upon "Recall" that is selected from OSD
Display Size	- All preset modes shall expand to full screen size using OSD Horizontal and Vertical Size controls
Display Data Channel (DDC)	- The purpose of the DDC test is to verify the DDC1/ DDC2 operation of the projector and to verify Plug & Play function.

2. Check points for exterior and print pattern

Check item	Check point
Text & Pattern	missing letters & pattern or blurry prints are unacceptable.
Exterior	dirt, scrape, water ripples and uneven color are unacceptable.
Buttons	stuck buttons are unacceptable.
Focus Ring	Focus ring is functioning smoothly.
Logo	missing logo, missing prints and blurry prints are unacceptable
Screw	All screws sure be fixed and in right type.
Plastic parts	All plastic parts can not be broken and damaged.
Connector	All interface connector should be complete and workable.

Firmware Upgrade

5-1 Equipment Needed

Software :

- C20_FW_MSTUPUP.BIN
- C20_FW_AMAMUPUP.BIN

Hardware :

- Projector (C20)
- SD Card
- Power adapter (47.8BU11G001 and 47.8BU14G001)
- PC
- Monitor
- USB Male cable(42.0028DG001)

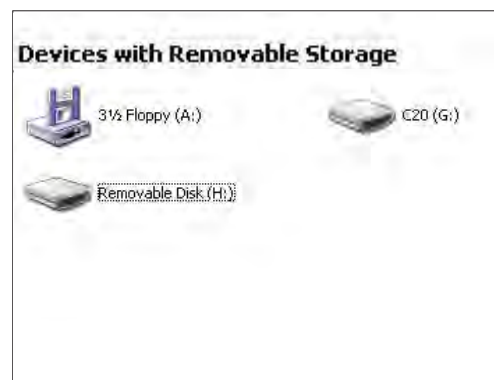


5-2 Firmware Upgrade Procedure

1. Insert Micro SD card into the projector and connect it to PC by USB Male cable. Then turn on the projector.



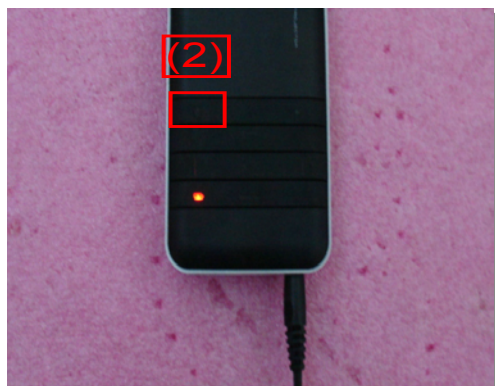
2. There is one removable Disk in "My Computer" .Copy firmware "MSTUPUP. BIN ", "AMAMUPUP.BIN" to the removable Disk. Then unplug the USB Male cable.



3. Process
 - (1) Insert power adapter into C20.



- (2) Press the power button to turn on the projector.



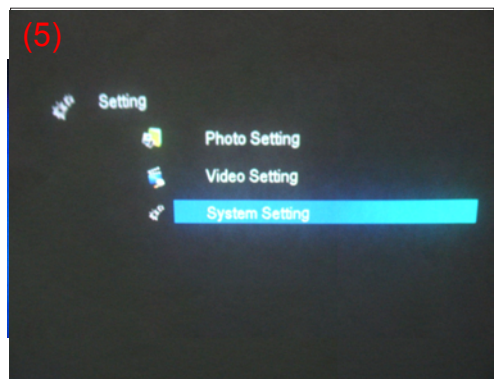
(3) Press "right","enter" to select Micro SD.



(4) Choose "Setting" icon.



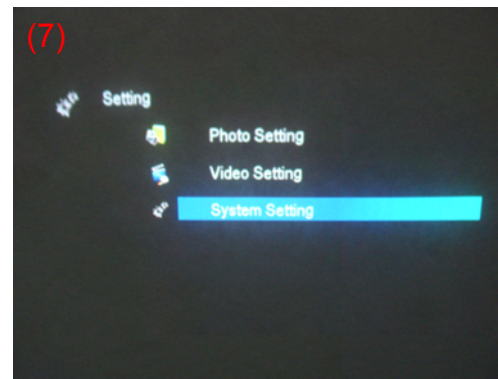
(5) In this pattern,press "Up",
"Down","Up","Down","Enter"



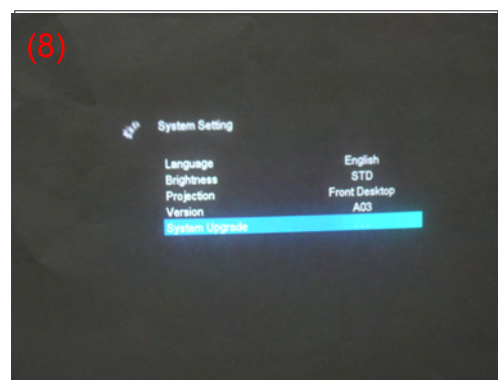
(6) The system will come back to left
pattern,then choose "setting"



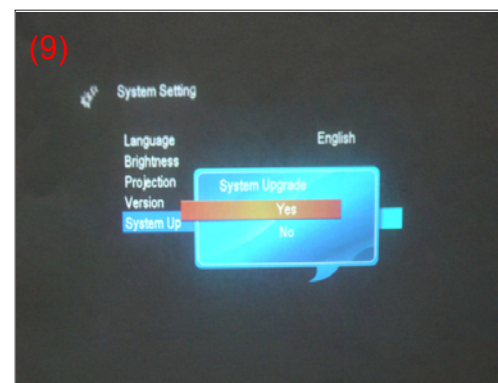
(7) Choose "system setup"



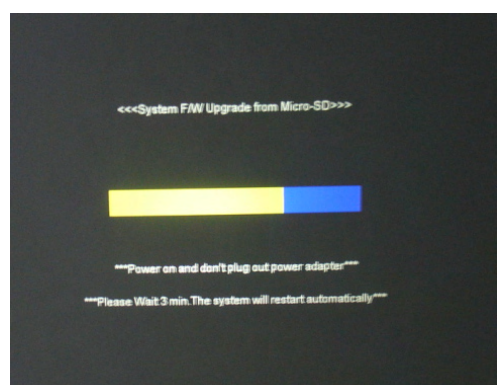
(8) The "system upgrade" will show,choose
"system upgrade"



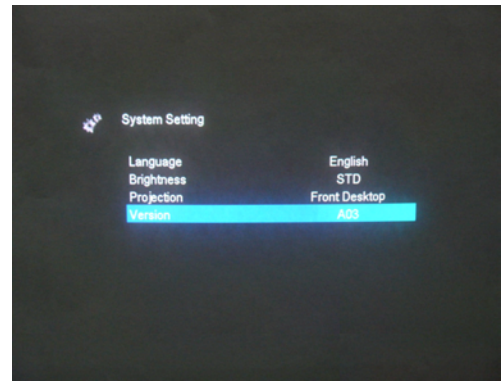
(7) Choose "Yes".



4. Wait a few minutes until the projector downloads finish,then the system will reboot.In this process, please ensure the projector power on and don't plug out power adapter.



5. When firmware upgrade procedure is finished,press "menu","enter","enter", "System Setting" and choose "Version" item. The new window will show the latest Multimedia Firmware Version for us to check if it is correct.



6. Get into service mode.Press "right","right", then check the System Firmware Version.



EDID Upgrade

6-1 EDID Introduction

Extended Display Identification Data is a VESA standard data format that contains basic information about a display device and its capabilities, including vendor information, maximum image size, color characteristics, factory pre-set timings, frequency range limits, and character strings for the monitor name and serial number.

The information is stored in the display and used to communicate with the system through a Display Data Channel (DDC), which sits between the display device and the PC graphics adapter. The system uses this information for configuration purposes, so the monitor and system can work together.

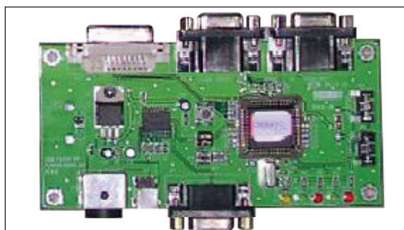
6-2 Equipment Needed

Software

- EDID Program (Generic V0.67)
- EDID File (*.ini)

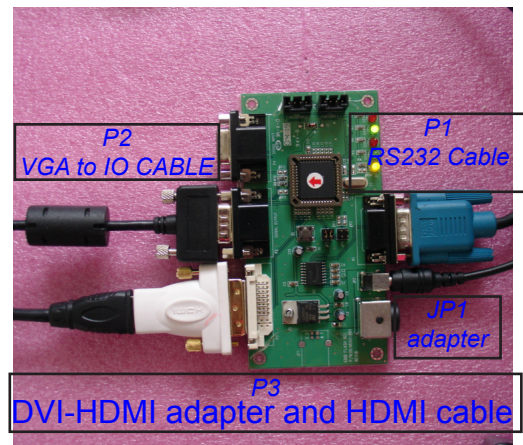
Hardware

- Projector
- Generic Fixture :80.00001.001 for EDID Key-in (Fixture: JP3 must be closed)
- Power adapter for projector (P/N: 47.8BU11G001&47.8BU14G001)
- DVI-HDMI adapter(42.00293G001)
- Mini HDMI to HDMI cable (42.00253G001)
- Monitor
- PC
- Universal to VGA Cable (P/N: 42.0020AG001)
- RS-232 Cable : 42.83C07G001
- Power adapter 2 for fixture: 47.57803G001



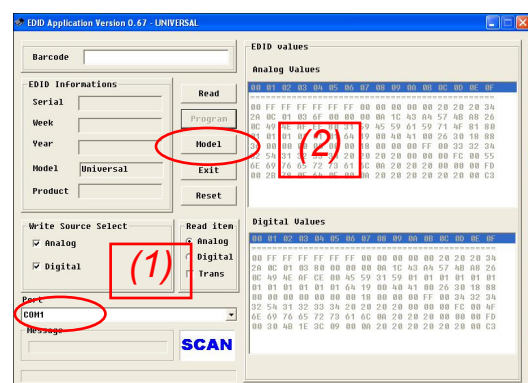
6-3 Setup Procedure

1. Connect all ports
 - Power adapter 2 to fixture JP1.
 - Fixture P1 to PC COM1 Port.
 - Fixture P2 to Projector "Universal I/O" port by VGA to IO cable.
 - Fixture P3 to Projector "Mini HDMI" port by DVI-HDMI adapter and HDMI cable
 - Connect the power adapter 1 to projector "dc in 5v" port.



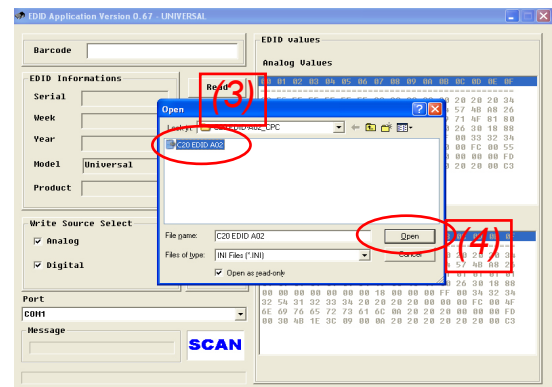
6-4 EDID Key-In Procedure (VGA & HDMI Interface)

1. Click on "EDID" to execute EDID program.
2. Choose model
 - (1) In the port selection bar, please choose the port which you are using.
 - (2) Click "Model".



(3) Choose the source file
"C20 EDID_XX.ini".

(4) Click "Open".

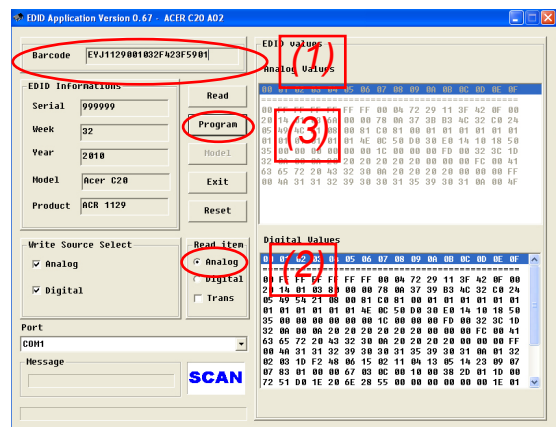


3. Programming

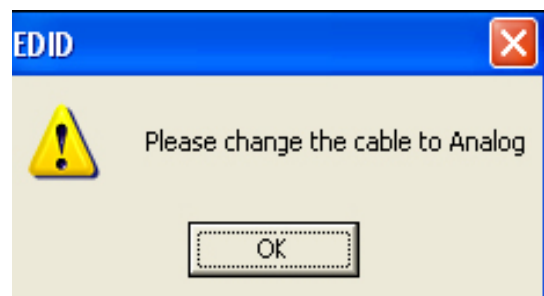
(1) Key in the serial number into the
barcode blank space.

(2) In "Write Source Select", click "Analog".

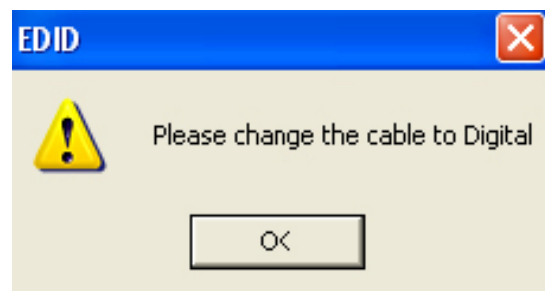
(3) Click "Program".



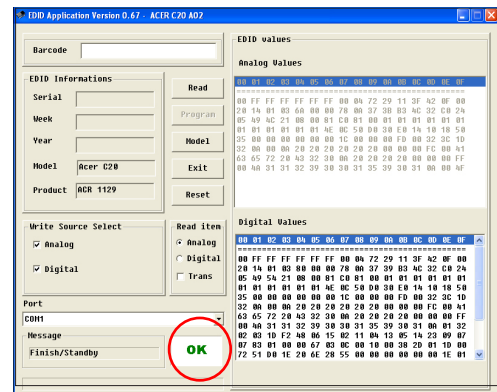
4. When the message "Please change
the cable to Analog" shows on the
screen, click "OK" button.



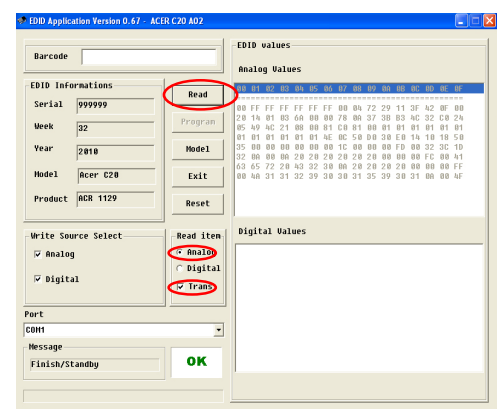
5. When the message "Please change
the cable to Digital" shows on the
screen, click "OK" button.



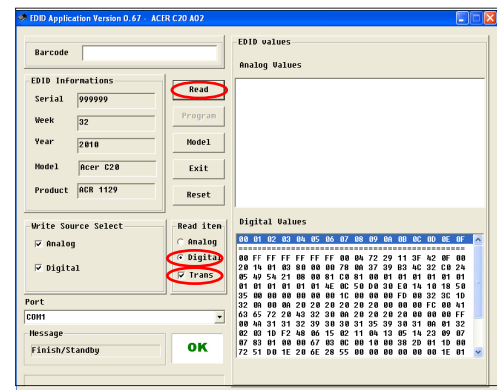
6. When the EDID program is completed, a message "OK" will appear on the screen.



7. Select "Trans" & "Analog" in the read item, and then click "Read" button, EDID information will show the result.



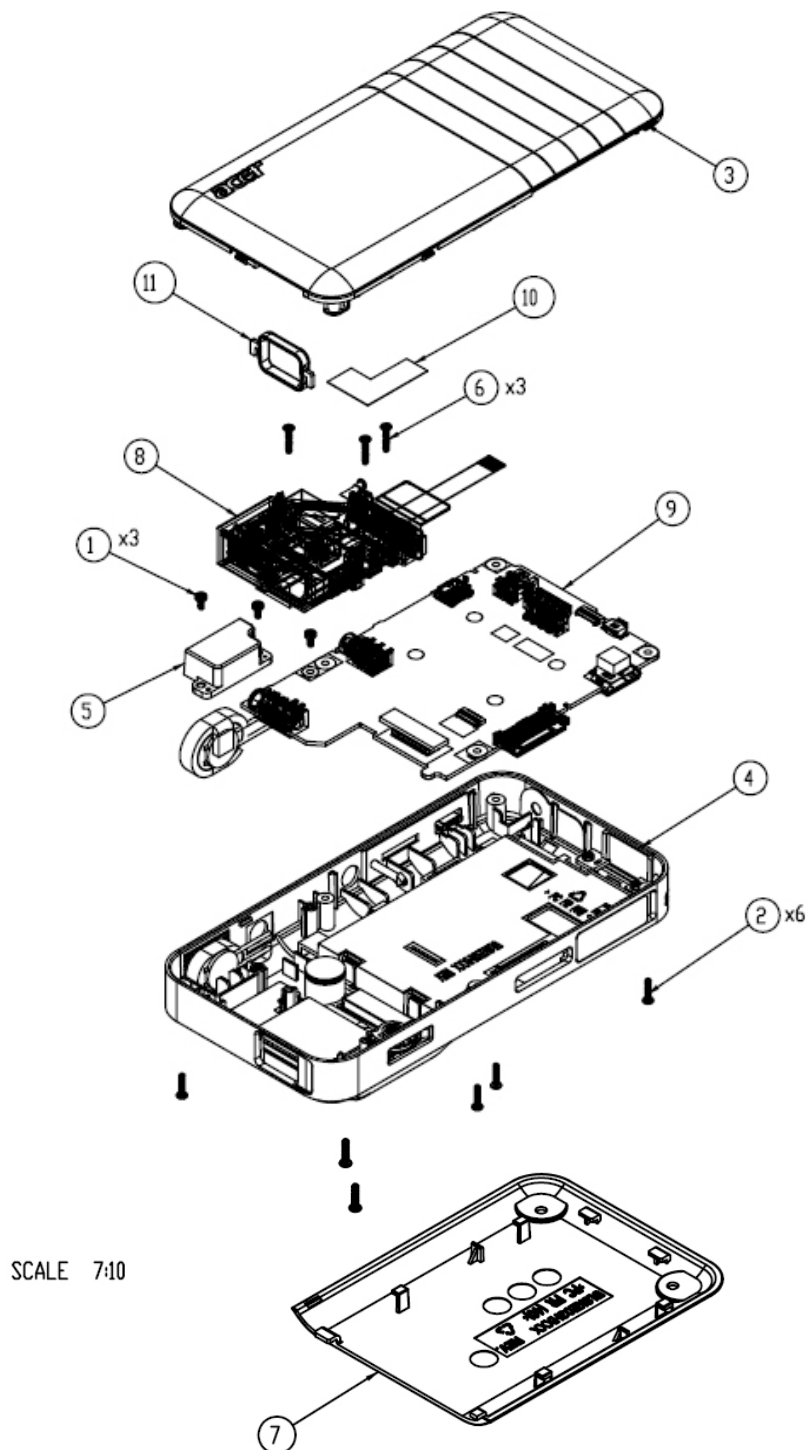
8. Select "Trans" & "Digital" in the read item, and then click "Read" button, EDID information will show the result.



Appendix A

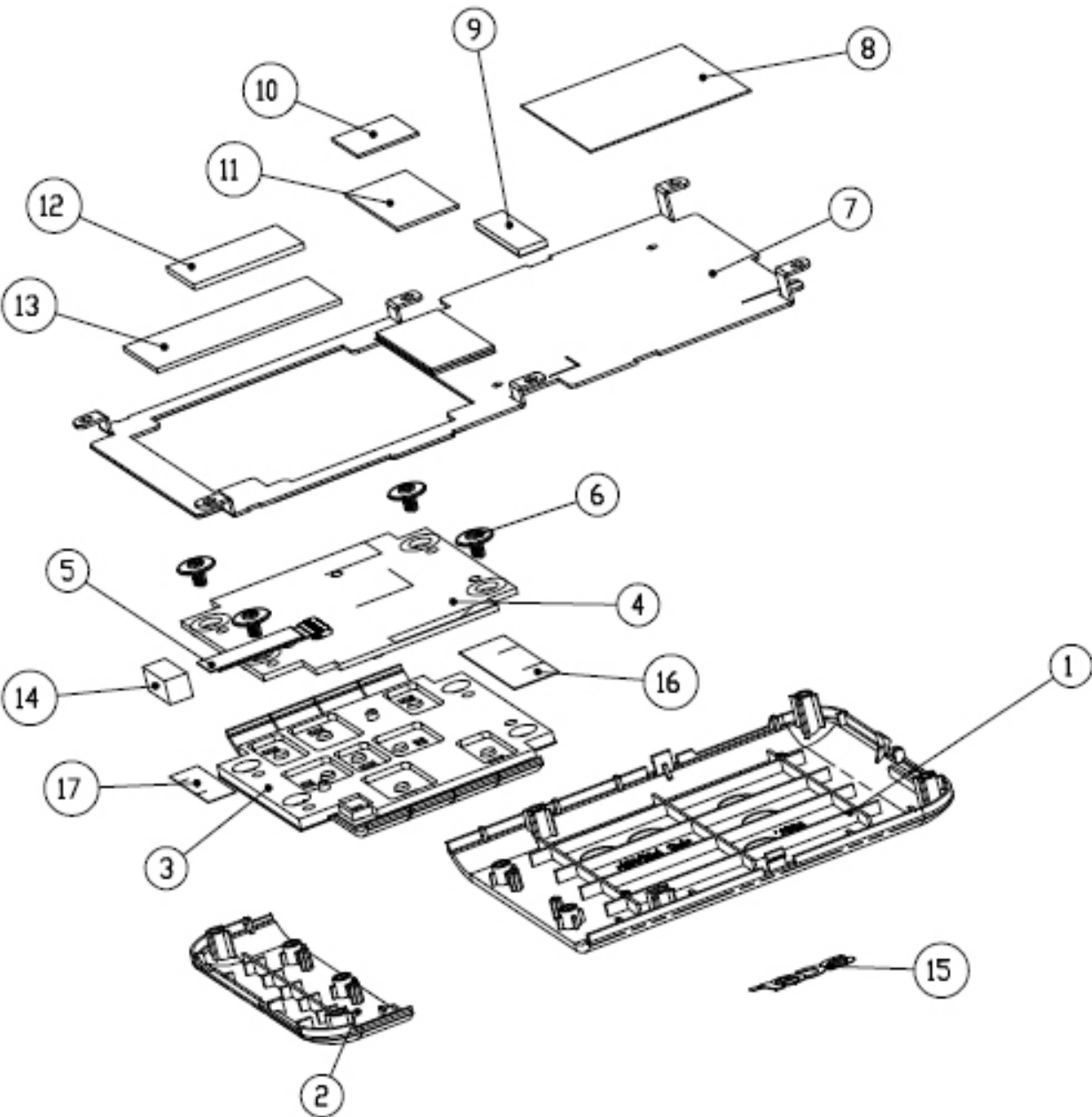
Note: This chapter is only designed to show the exploded image of the projector. For updated part numbers, please refer to RSPL report.

DP.C20



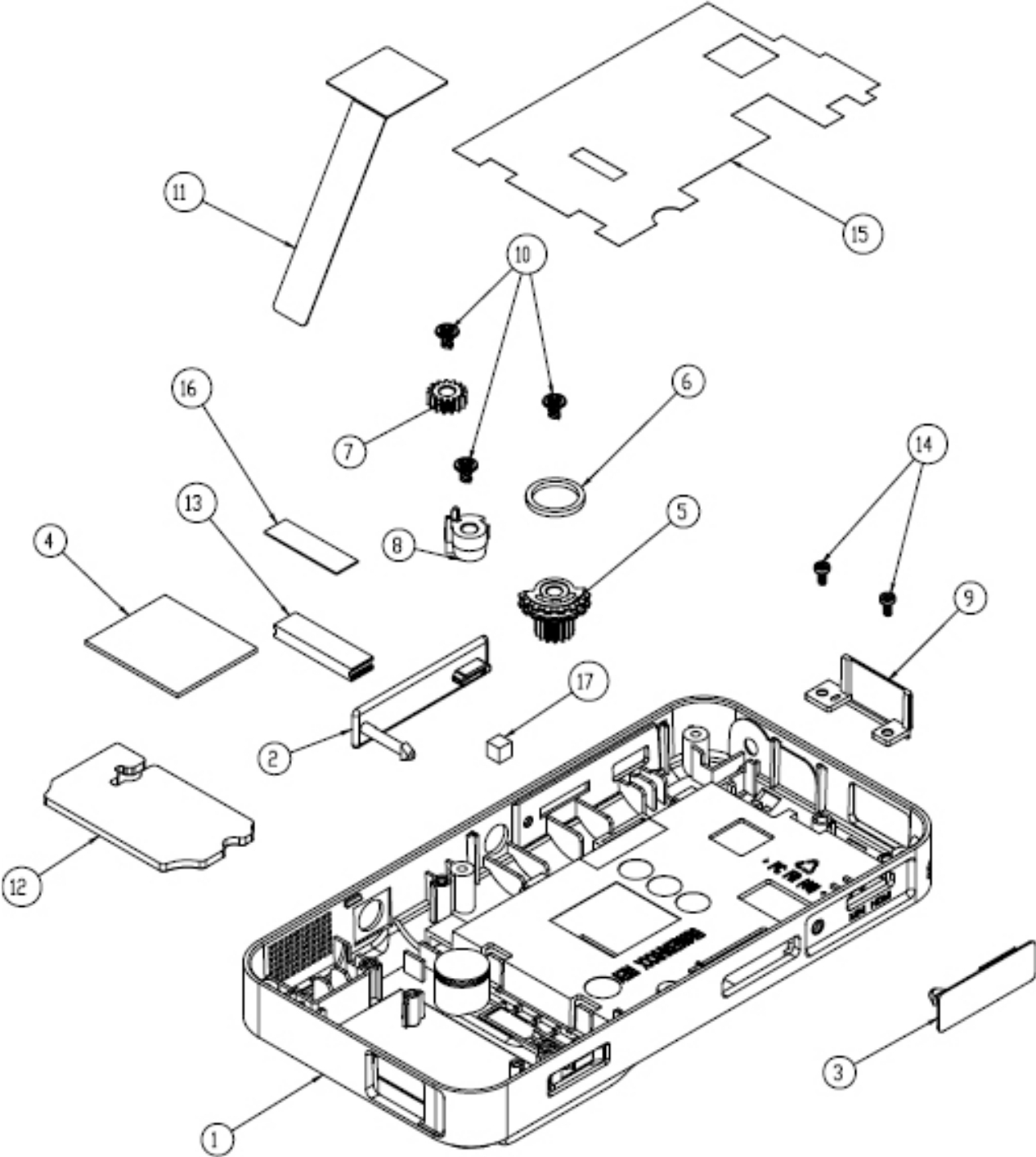
Item	P/N	Description	Parts Supply
1	85.1A52AG030	SCREW PAN HEAD MACHINE M1.4*3.0 P=0.3 NYLOK NICKEL	
2	85.1A52AG060	SCREW PAN HEAT MACHINE M1.4*6.0 P=0.3 NYLOK NICKEL	
3	70.8KE01G001	TOP COVER MODULE C20	
4	70.8KE02G001	BOTTOM COVER MODULE C20	
5	51.8EN06G001	SPEAKER HOLDER MN3600HA PK201	
6	85.1A12AG080	SCREW CAP HEAD TAP M1.4*8 PK201	
7	70.8KE03G001	BATTERY COVER MODULE C20	
8	70.8KE05G001	ASSY ENGINE MODULE C20	
9	70.8KE04G001	MAIN BOARD PCBA MODULE C20	
10	41.8EN02G001	EMI TAPE W13.5xL20mm	V
11	51.8KE07H001	CONE GUIDE PC C20	V

Assy Top Cover Module



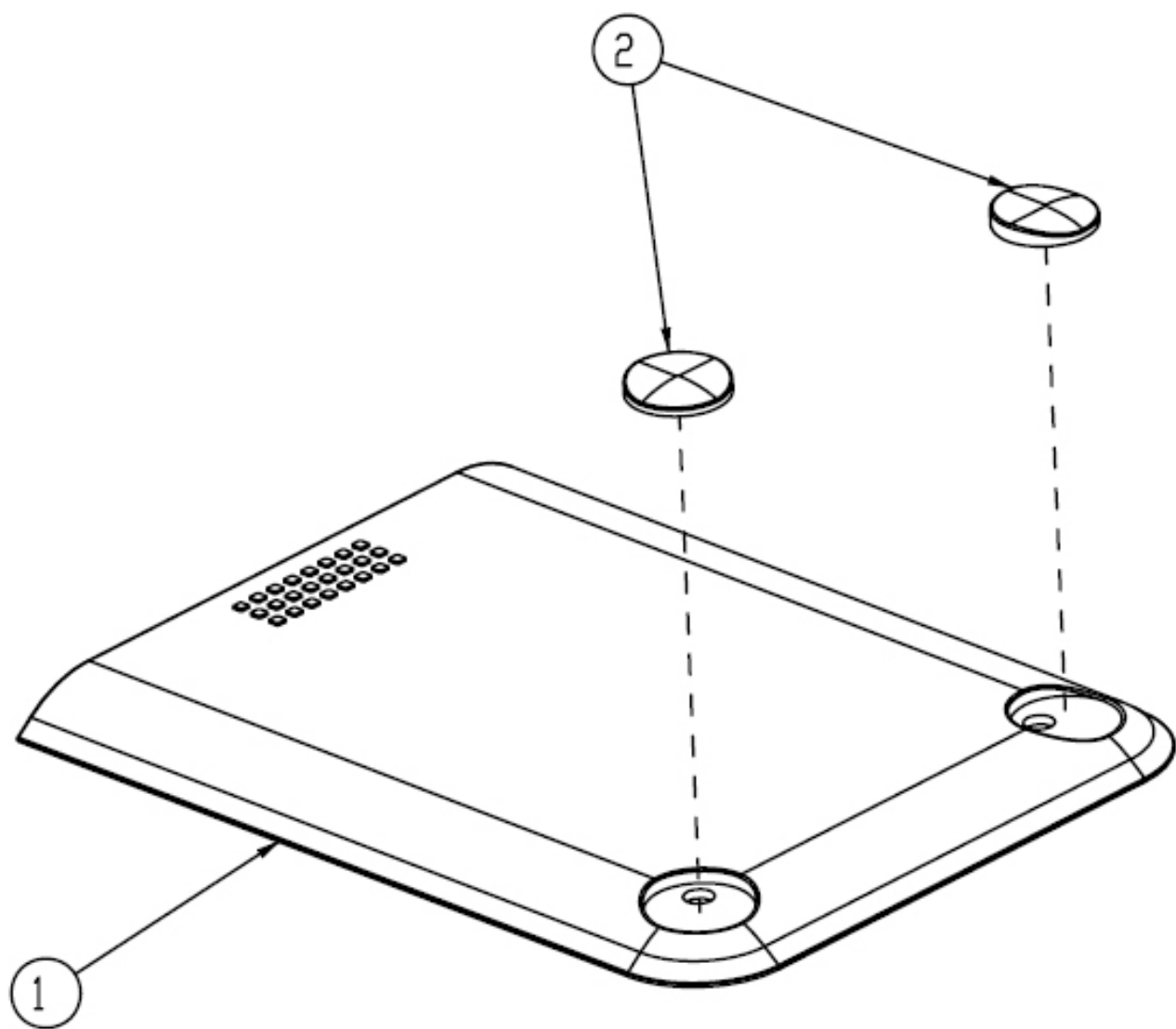
Item	P/N	Description	Parts Supply
	70.8KE06GR01	TOP COVER MODULE C20(SERVICE)	V
1	51.8KE02H001	TOP COVER LN2520 C20	
2	51.8KE04H001	TOP COVER TRIM LN2520 C20	
2	52.8KE04G001	FLASH THERMAL PAD GR-Hm 11.3mmX19.5mmX1.5mm	V
3	51.8KE08H002	KEYPAD BUTTON P+R C20	
4	80.8KE03G001	PCBA KEYPAD BD FOR C20 PICO PROJECTOR	V
5	42.0030BG101	FFC M/B TO KEYPAD BOARD 10P P=0.5 50mm	V
6	85.3A12AG030	SCREW CAP MACHINE M1.4*3.0 P=0.3 NICKEL	
7	61.8KE01H001	TOP CU PLATE C1100 C20	
8	52.8EN09G001	TOP ENGINE THERMAL PAD GR-Hm 28.5x28.5x0.3t	
9	52.8EN11G001	8EN CR4305 FOR DMD FPC	
10	52.8EN07G001	DRAM THERMAL PAD GR-Hm 10.8x10.8x0.5t	
11	52.8EN06G001	DDP IC THERMAL PAD GR-Hm 21.6x10.9x0.5t	
13	52.8KE05G001	AM-IC THERMAL PAD GR-Hm 13.9mmx32.7mmx1.3mm	V
14	52.8EN14G001	FFC CNNT SPONGE PK201	
15	35.8KE02H001	TOP LOGO C20	
16	41.8KE01G001	EMI TAPE W8xL22.7mm for C20	
17	41.8KE02G001	EMI TAPE W5xL16mm for C20	

Assy Bottom Cover Module



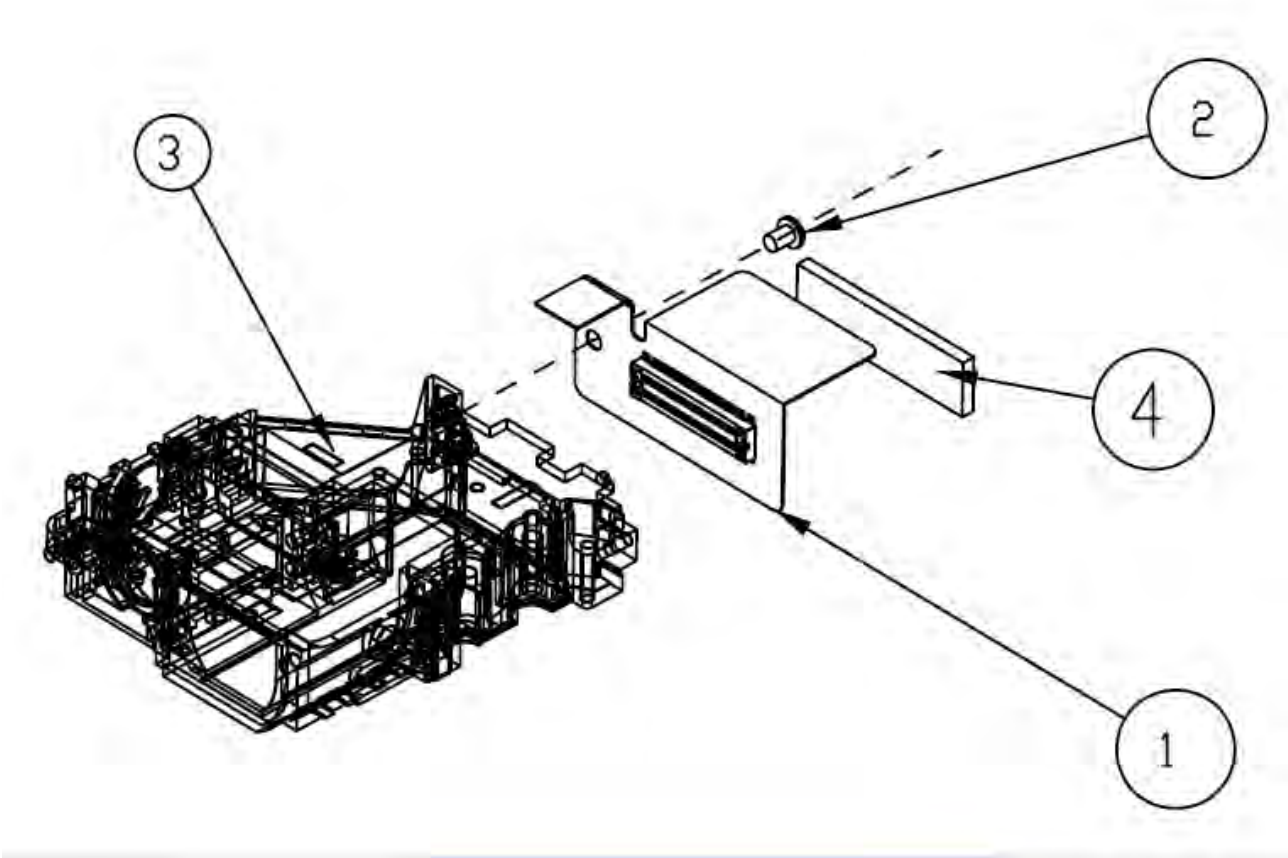
Item	P/N	Description	Parts Supply
	70.8KE07GR01	BOTTOM COVER MODULE C20(SERVICE)	V
1	51.8KE01H001	BOTTOM COVER PC C20	
2	51.8KE09G001	IO CAP USB P+R C20	
3	51.8KE10G001	IO CAP HDMI P+R C20	
4	52.8EN10G001	BOTTOM ENGINE THERMAL PAD GR-Hm 22.6x19.5x0.8t	
5	51.8KE05H001	FOCUS RING POM C20	V
6	52.8KE03H001	RUBBER RING C20	
7	51.8EN09G001	TRANSFER GEAR POM PK201	V
8	51.8EN10G001	FOCUS GEAR PK201	V
9	51.8KE06H001	IR COVER GE-121R C20	V
10	85.GA12AG030	SCREW CAP HEAD TAP M1.4*3 PK201	
11	51.8BU12G001	BATTERY PULL TAPE PK-101	
12	61.8KE02H001	BOTTOM CU PLATE C1100 0.5T C20	
13	61.8KE03H001	BOTTOM AL PLATE 6063 C20	
14	85.1A52AG030	SCREW PAN HEAD MACHINE M1.4*3.0 P=0.3 NYLOK NICKEL	
15	51.8EN11G001	3M TAPE FOR BOTTOM COVER PK201	
16	52.8EN12G001	DMD THERMAL PAD 17.7X5.3X0.3	
17	52.8EN13G001	GEAR SPONGE PK201	

Assy Battery Cover Module



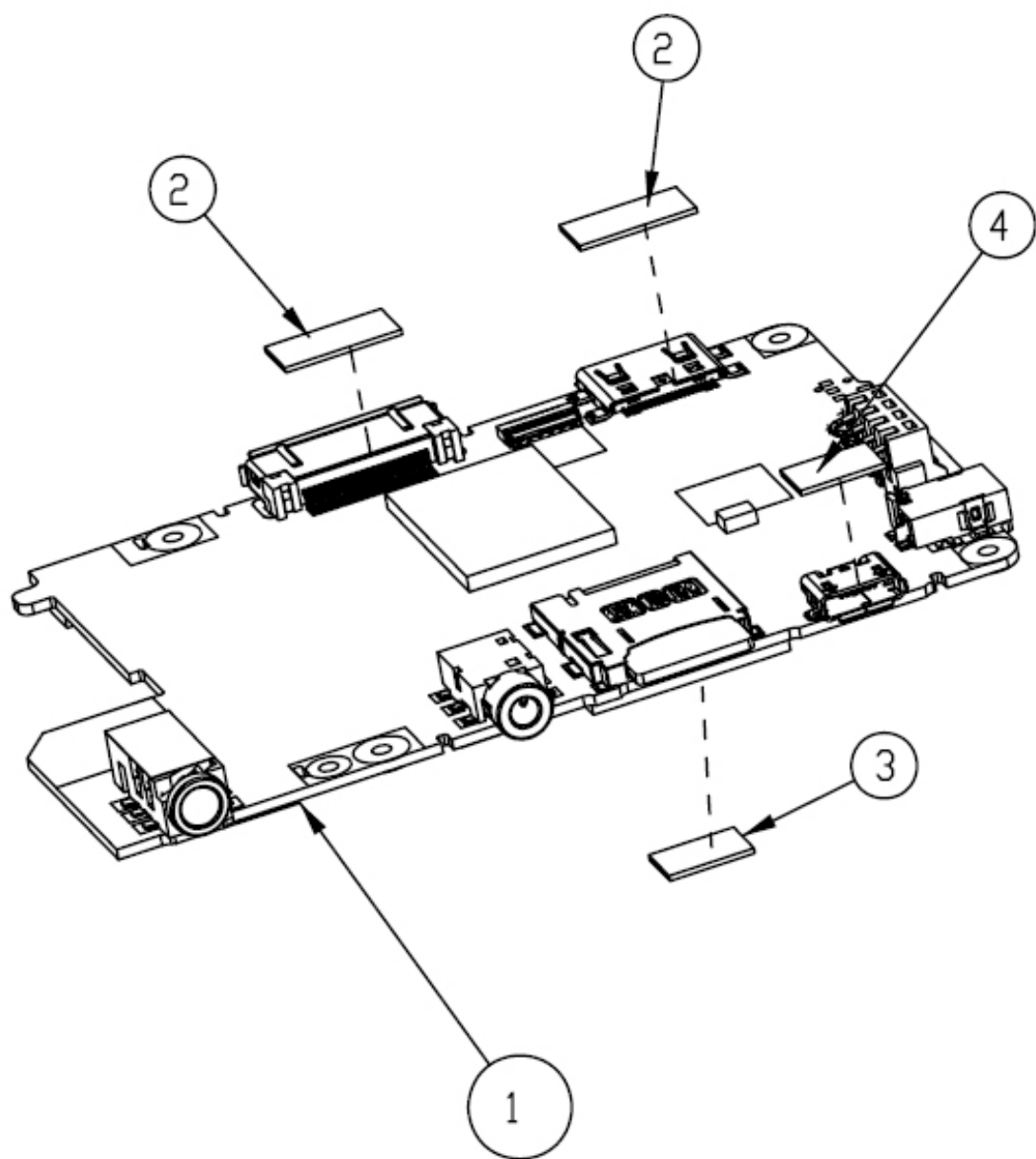
Item	P/N	Description	Parts Supply
	70.8KE08GR01	BATTERY COVER MODULE C20(SERVICE)	V
1	51.8KE03H001	BATTERY COVER PC C20	
2	52.8KE01H001	RUBBER FOOT C20	

Assy Engine Module



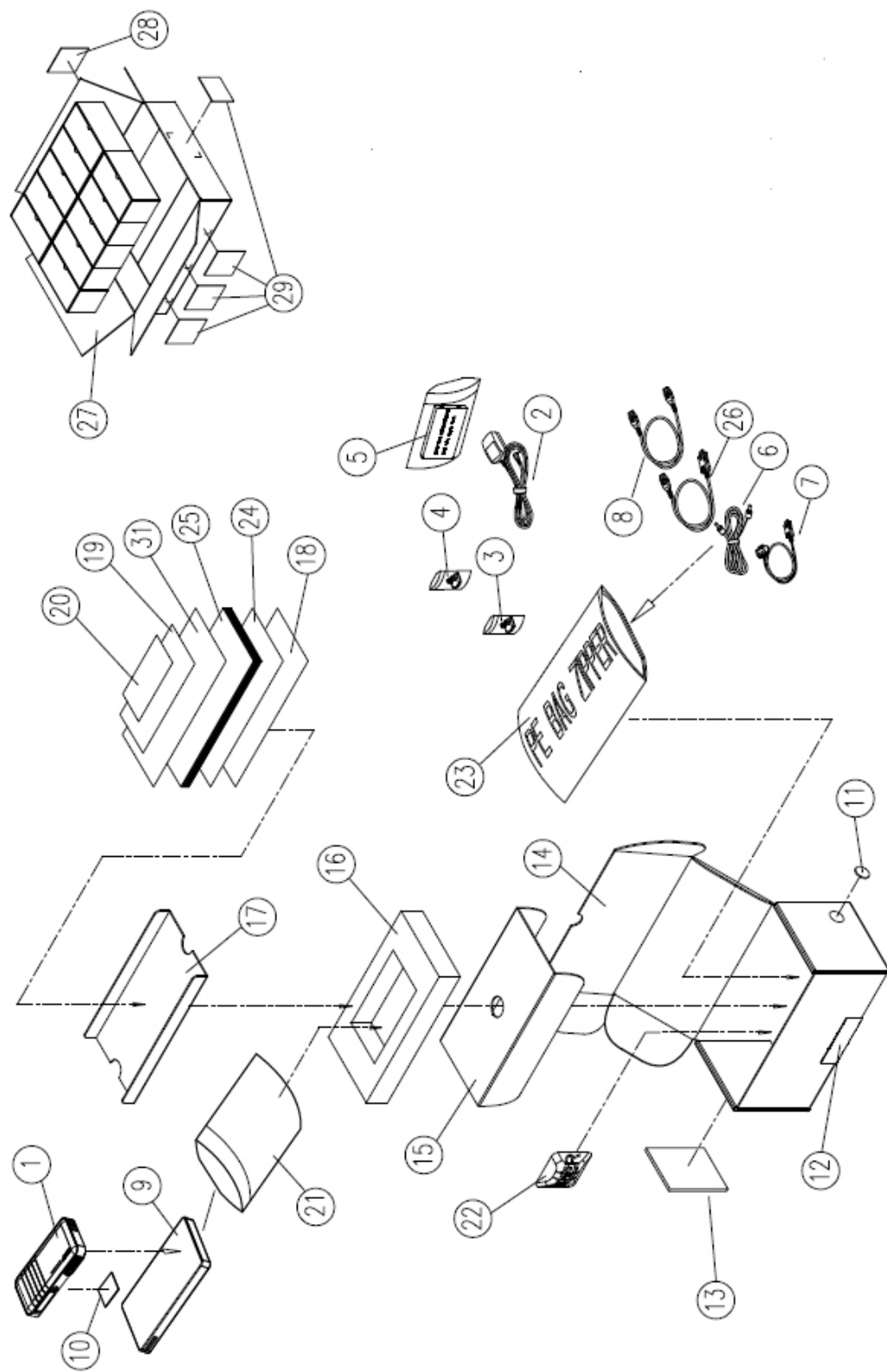
Item	P/N	Description	Parts Supply
	70.8KE09GR01	ASSY ENGINE MODULE C20(SERVICE)	V
1	42.00320G001	FPC ENGINE TO MB BOARD 50P WITH BTB CNNT PK201	
2	85.YA32AG031	SCREW FLAT TAP M1.4*3 BLACK	
3	75.8KE01G002	0.3" DMD, F/2.4 PL, OSTAR COMPACT LED - R/B:Q6WM - G: Q9WM(YOI FLC II ENGINE)	
4	41.83J07G001	EMI TAPE W5*H1.0*L11mm PD527	

Assy Main Board Module



Item	P/N	Description	Parts Supply
	70.8KE10GR01	ASSY MAIN BOARD MODULE C20(SERVICE)	V
1	80.8KE01G001	PCBA MAIN BD FOR C20 PROJECTOR	
2	41.8EM02G001	EMI GASKET W5*H0.5*L11mm	
3	41.8EN03G001	EMI GASKET W5.5xH3xL5.5mm	
4	41.8CU07G001	EMI gasket W5xH0.5xL8	

DP.C20



Item	P/N	Description	Parts Supply
1	DC.8KE01G001	D.C. C20	
2	47.8BU11G001	AC ADPTR 100-240VAC IN 5V 2A OUT FOR PHIHONG	V
3	47.8BU13G001	AC ADAPTOR PLUG EU TYPE PHIHONG PK-102	V
4	47.8BU14G001	AC ADAPTOR PLUG UK TYPE PHIHONG PK-102	V
5	46.8CU01G001	BTRY LI-ION POLYMER BATTERY PACK 3.7V 1410MAH SMP	
6	42.002C1G003	CABLE AV IN MINI JACK-M 2.5mm TO 3.5mm 1000mm BLACK C20	
7	42.0020AG001	CABLE 24P TO VGA-M 600MM	
8	42.0028DG001	CABLE USB MICRO B-M TO USB A-M 1000MM	
9	53.8KE01G001	SOFT CARRY BAG C20	V
10	35.8KE03H001	SPEC LABEL C20	V
11	35.8KE05H001	LABEL COLOR SILVER C20	
12	35.82V02G001	LABEL CARTON(SEAL) 110*50mm PD120	
13	35.8KE04H001	LABEL CARTON 60mmx80mm BLANK C20	
14	55.8KE01H001	CARTON BOX C20	
15	55.8KE02H001	CABLE CARDBOARD C20	
16	55.8KE03H001	MACHINE BOX CARDBOARD C20	
17	55.8KE04H001	CARDBOARD TOP C20	
18	36.00027G001	SERVICE STATION CARD	
19	36.8KE01H001	QUICK START CARD MULTILINGUAL ACER C20	
20	36.00029G001	SECURITY CARD FOR ACER	
21	51.D0132G001	PE BAG LDPE 120*180*0.04 MM	
22	57.00002G001	PACK SIO2 DRIER 5g	
23	51.80135G002	PE BAG ZIPPER 240*170*0.04 #8 FOR OPTOMA	
24	36.8ER05G001	SERVICE STATION SHEET FOR EMACHINES TURKEY	
25	36.00006G031	WARRANTY CARD ,EUROPE FOR ACER	
26	42.0028CG001	CABLE USB MICRO A-M TO USB A-F 300MM	
27	55.8KE05H001	OUTSIDE CARTON BOX B FLUTE C20	
28	35.8KE01H001	IATA label For Acer C20	
29	35.52302G091	LABEL CARTON 108*92 BLANK	V

Appendix B

I. Serial Number System Definition

Serial Number Format for Projector

EYJBT01001 029 00000 59 0 1

① ② ③ ④ ⑤ ⑥

- ① : EYJBT01001 = Part Number
- ② : 029 = Date Code (ex:2010=0, the twenty-ninth week of the year= 29)
- ③ : 00000 = Serial Numbers
- ④ : 59 = Manufacturing Code
- ⑤ : 0 = Version Code
- ⑥ : 1 = Auto-Language Code

EX: EYJBT010010290000005901

This label represents the serial number for C20. It is produced at CPC on twenty-ninth week of 2010. Its serial code is 00000.

II. PCBA Code Definition

PCBA Code for Projector

<u>A</u>	<u>B</u>	<u>XXX</u>	<u>XXXXXXXXXX</u>	<u>CC</u>	<u>XXX</u>	<u>EEEE</u>
①	②	③	④	⑤	⑥	⑦

① : ID

② : Vendor Code

③ : Firmware Version

④ : P/N

⑤ : MB version

⑥ : Date Code

⑦ : S/N